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A New Species of the '*Periclimenes aesopius* Species Group' (Decapoda: Palaemonidae: Pontoniinae) from the Ryukyu Islands, Southern Japan

Junji Okuno

Coastal Branch of Natural History Museum and Institute, Chiba, 123 Yoshio, Katsuura, Chiba, 299–5242 Japan

Abstract A new species of the pontoniinid shrimp genus *Periclimenes*, *P. sarasvati*, is described on the basis of five female specimens associated with anthozoan invertebrates from the Ryukyu Islands, southern Japan. The new species is a member of the '*P. aesopius* species group', and is closely similar to *P. venustus*. Morphologically, it differs from *P. venustus* by having a smaller 'bec ocellaire' of the ophthalmic somite, 3 minute distomesial teeth on the incisor process of the mandible, the bilobed distal endite of the maxilla, the shorter second pereiopod, and the smaller number of recurved teeth on the cutting borders of the second pereiopodal chela. Keys to the known species of the species group (both morphology and coloration) are provided.

Key words: Crustacea, Decapoda, Palaemonidae, Pontoniinae, *Periclimenes sarasvati* sp. nov. cnidarian associate, Ryukyu Islands, Japan.

In the most speciose pontoniinid genus *Periclimenes* Costa, 1844, the '*Periclimenes aesopius* species group' is characterized by having similar second pereiopods of both sides with unarmed meri and carpi, a strongly produced inferior orbital margin with a reflected inner flange, an ophthalmic somite usually with a 'bec ocellaire', and a posterodorsally produced third abdominal somite (Bruce, 1991). The *P. aesopius* species group currently comprises eight species from the Indo-West Pacific (Okuno & Nomura, 2002). Some additional species have been reported on several field guidebooks for divers and naturalists (see Gosliner *et al.*, 1996; Debelius, 1999; Minemizu, 2000), but they have not been described (Bruce, 1990; Okuno & Nomura, 2002). In this study, one of these species is described on the basis of five specimens from the Ryukyu Islands, southern Japan. The new species, *P. sarasvati*, is closely related to *P. venustus* Bruce, 1990 in the spination of the ambulatory propodi, but is distinguished from the later species by both morphology and coloration in life.

The specimens were recently collected from the sublittoral zone in the Ryukyu Islands with SCUBA gear. The illustrations were made with the aid of a drawing tube mounted on a LEICA MZ12 stereomicroscope. The postorbital carapace length is abbreviated as CL in the text. The specimens examined in this study are deposited in the Coastal Branch of Natural History Museum and Institute, Chiba (CMNH), Nationaal Natuurhistorisch Museum, Leiden (RMNH), National Science Museum, Tokyo (NSMT), and Natural History Museum and Institute, Chiba (CBM). When making the key to the known species of this species group based on their color patterns, I made reference to the following reports: *P. aesopius* (Bate, 1863) for Debelius (1999); *P. holthuisi* Bruce, 1969 for Bruce (1977, 1979); *P. kobayashii* Okuno & Nomura, 2002 for Okuno & Nomura (2002); *P. longicarpus* Bruce & Svoboda, 1983 for Baumeister (1993); *P. magnificus* Bruce, 1979 for Bruce (1979) and Minemizu (2000).

For comparative purpose, the following specimens were examined:

Periclimenes holthuisi Bruce, 1969. Long Ha

Wan, New Territories, Hong Kong, 22°18.5′N, 114°18.27′E, 3.7 m, 25 Aug. 1965, coll. J. D. Bromhall: 1♂, 2.5 mm CL, holotype (RMNH D 33226) (examined by C. H. J. M. Fransen).

Periclimenes venustus Bruce, 1990. Fukaura, Amami-Oshima Island, Amami Islands, 8 m, in association with *Actinodendron arboreum* (Quoy & Gaimard, 1833), 2 Sep. 1993, coll. J. Okuno: 1 ovig.♀, 5.1 mm CL (CMNH-ZC 00869); Shimajiri, Kume-jima Island, Ryukyu Islands, 5 m, in association with *Radianthus crispus* (Ehrenberg, 1834), 23 Nov. 1992, coll. K. Nomura: 1♂, 3.2 mm CL (CBM-ZC 6443); Aragusuku-jima Island, Yaeyama Group, Ryukyu Islands, 6 m, in association with *Goniopora* sp., 30 Mar. 2000, coll. K. Yanagi: 1♂, 3.6 mm CL, 1 ovig.♀, 5.7 mm CL (CMNH-ZC 00857).

Systematic Account

Periclimenes sarasvati sp. nov.

[New Japanese name: Nadeshiko-kakure-ebi]

(Figs. 1–4, 6A, B)

Periclimenes holthuisi: Debelius, 1983: 93, unnumbered fig.; Debelius, 1984: 92, unnumbered figs.; Baensch & Debelius, 1992: 530, unnumbered fig.; Allen & Steene, 1994: 146, unnumbered fig.; Debelius & Baensch, 1994: 530, unnumbered fig.; Colin & Arneson, 1995: 221, fig. 1043; Gosliner *et al.*, 1996: 204, unnumbered fig.; Masuda, 1999: 45, unnumbered fig. Not *Periclimenes holthuisi* Bruce, 1969.

Periclimenes sp. Takeda, 1986: 117, unnumbered fig.; Jones & Morgan, 1994: 67, unnumbered fig.

Periclimenes tosaensis: Debelius, 1999: 177, unnumbered figs. Not *Periclimenes tosaensis* Kubo, 1951.

Periclimenes sp. 5: Minemizu, 2000: 54, unnumbered fig.

Periclimenes venusta: Kobayashi, 2000: 174, unnumbered fig. Not *Periclimenes venustus* Bruce, 1990.

Material examined. Holotype. Off Hatenohama, Kume-jima Island, 26°20.2′N, 126°52.1′E, 21 m, 19 Dec. 2001, coll. J. Okuno: ♀, 3.1 mm CL (NSMT-Cr 14067).

Paratypes. Ryukyu Islands. Maeda-misaki, Okinawa-jima Island, 26°25.9′N, 127°46.5′E, 26 m, 6 Aug. 2001, coll. T. Yanagisawa: 1♀, 2.7 mm CL (CMNH-ZC 00892); Zamami-jima Island, Kerama Group, 26°14.8′N, 127°18.6′E, 5 m, 6 Apr. 1998, coll. A. Ono: 1 ovig.♀, 5.9 mm CL (CMNH-ZC 00891); Ahra, Kume-jima Island, 26°18.2′N, 126°46.7′E, 19 Sep. 1993, coll. S. Hirayama: 1 ovig.♀, 3.4 mm CL (CBM-ZC 6444); same data as holotype: 1♀, 3.4 mm CL (CMNH-ZC 00893).

Host. Euphyllia ancora Veron and Pichon, 1980 (Cnidaria: Anthozoa: Scleractinia: Caryophylliidae).

Diagnosis. A medium-sized pontoniinid shrimp with subcylindrical body form. Carapace with a single epigastric spine. Rostrum slender, arched, dentate on dorsal margin. Ophthalmic somite with small 'bec ocellaire'. Distomesial margin of incisor process of mandible armed with 3 acute teeth. Distal endite of maxilla bilobed. Antepenultimate segment of third maxilliped without distolateral spine. Second pereiopod overreaching distal margin of scaphocerite by proximal part of palm, with carpus distinctly shorter than chela. Fingers of second pereiopods shorter than palms. Dactylus and fixed finger of second pereiopod with cutting borders armed with 2–4 recurved acute teeth mesially. Ambulatory pereiopods with dactyli slender, biunguiculate, ventral surface of propodi each with single spine posterior to ventrodistal spine. In life, ophthalmic somite without white transverse band, and tergum of third abdominal somite with purple V-shaped patch in dorsal view.

Description. Carapace (Fig. 1) smooth, glabrous, lacking supraorbital spine; orbit feebly developed, inferior orbital angle strongly produced, acute, with inner ventral flange (Figs. 2B–D); antennal spine well developed, slender, submarginal, arising distinctly ventral to orbital angle (Fig. 2B–D); hepatic spine small, arising distinctly ventral to level of antennal spine (Figs. 1, 2B); epigastric spine present (Figs. 1, 2A–C); pterygostomian margin bluntly produced.

Rostrum (Fig. 2A, B) slender, weakly arched, 0.59–0.94 times as long as carapace, slightly overreaching level of distal margin of intermediate segment of antennular peduncle; dorsal blade low, with 7–9 equidistant, small, acute teeth, interspaced by short setae; ventral blade poorly de-

veloped, with row of long setae, subterminally with 1–2 small, acute teeth.

Fourth thoracic sternite without finger-like median process; fifth sternite with pair of semiquadrate lobes posteriorly; posterior sternites unarmed.

Abdomen (Fig. 1) smooth, glabrous; pleura of first to third somites broad, rounded, those of fourth and fifth posteriorly produced, but blunt; posterodorsal margin of third somite feebly produced posteriorly; sixth somite 0.80–1.10 times as long as carapace, 1.21–1.38 times as long as telson, posterolateral process acute, posteroventral margin produced, acute. Telson (Fig. 2E) feebly tapering posteriorly, posterior margin (Fig. 2F) convex, with 3 pairs of spines (lateral and intermediate spines simple, intermediate spines longest, mesialmost spines plumose); 2 pairs of small, subequal dorsolateral spines at midlength and posterior sixth length respectively.

Ophthalmic somite with small 'bec ocellaire' (Fig. 2C). Eye (Fig. 2A) with large, globular cornea, without ocellus; stalk distinctly longer than corneal diameter, becoming slightly narrower distally, maximum width subequal to maximum corneal diameter.

Antennular peduncle (Fig. 2G) with proximal segment distinctly longer than distal two segments combined; distolateral margin strongly produced, reaching level of midlength of intermediate segment, with row of setae, lateral margin straight, terminating distally in small acute tooth; ventromesial margin armed with small acute tooth; stylocerite short, slender, acute, reaching level of proximal third of proximal segment; statocyst well developed, rounded; intermediate segment slender, feebly lobed laterally, slightly obliquely articulated with distal segment; distal segment slightly shorter than intermediate segment in length, slender, non-setose. Upper flag-

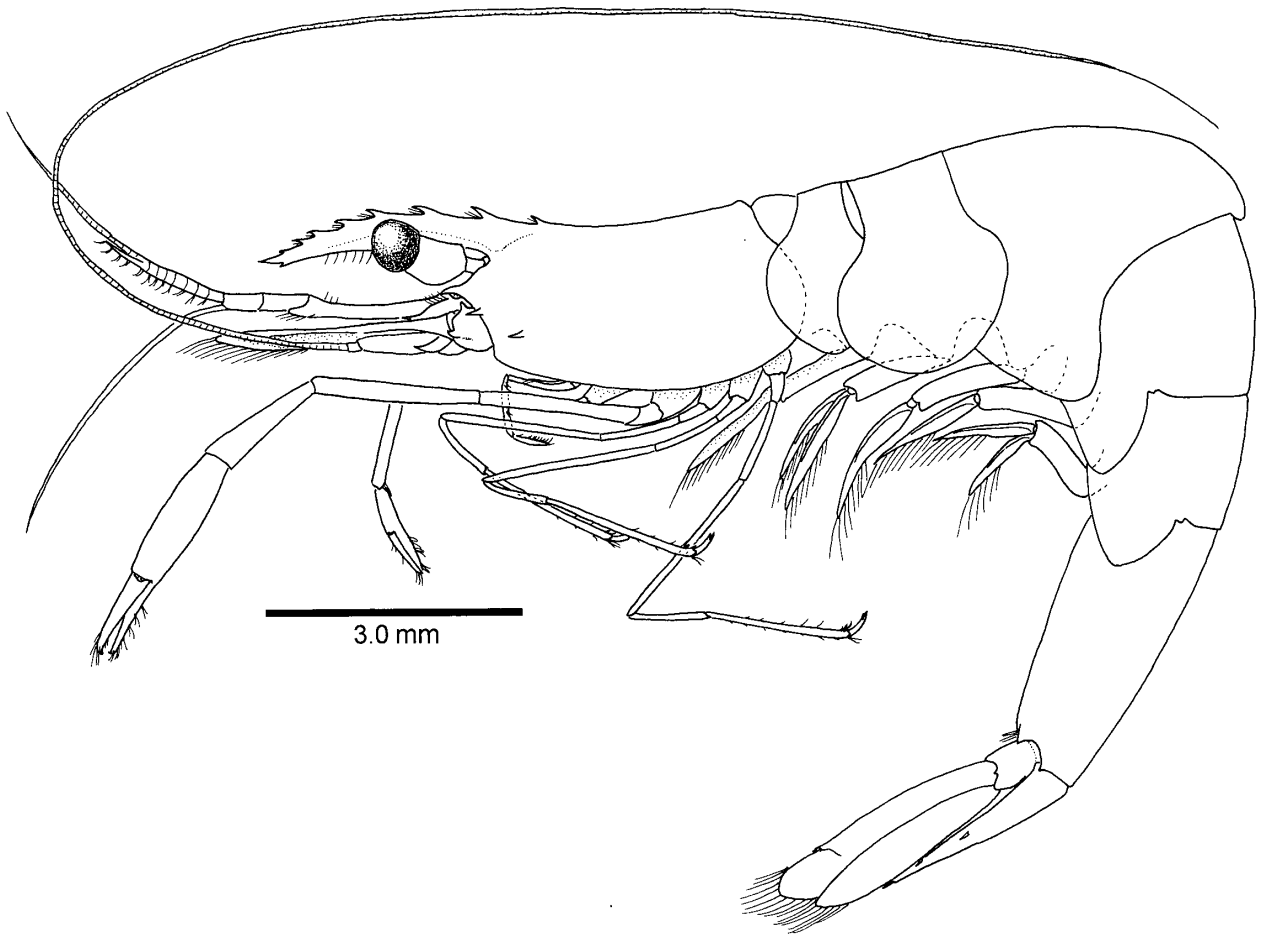

Fig. 1. *Periclimenes sarasvati* sp. nov. Holotype female (NSMT-Cr 14067). Entire animal in lateral view.

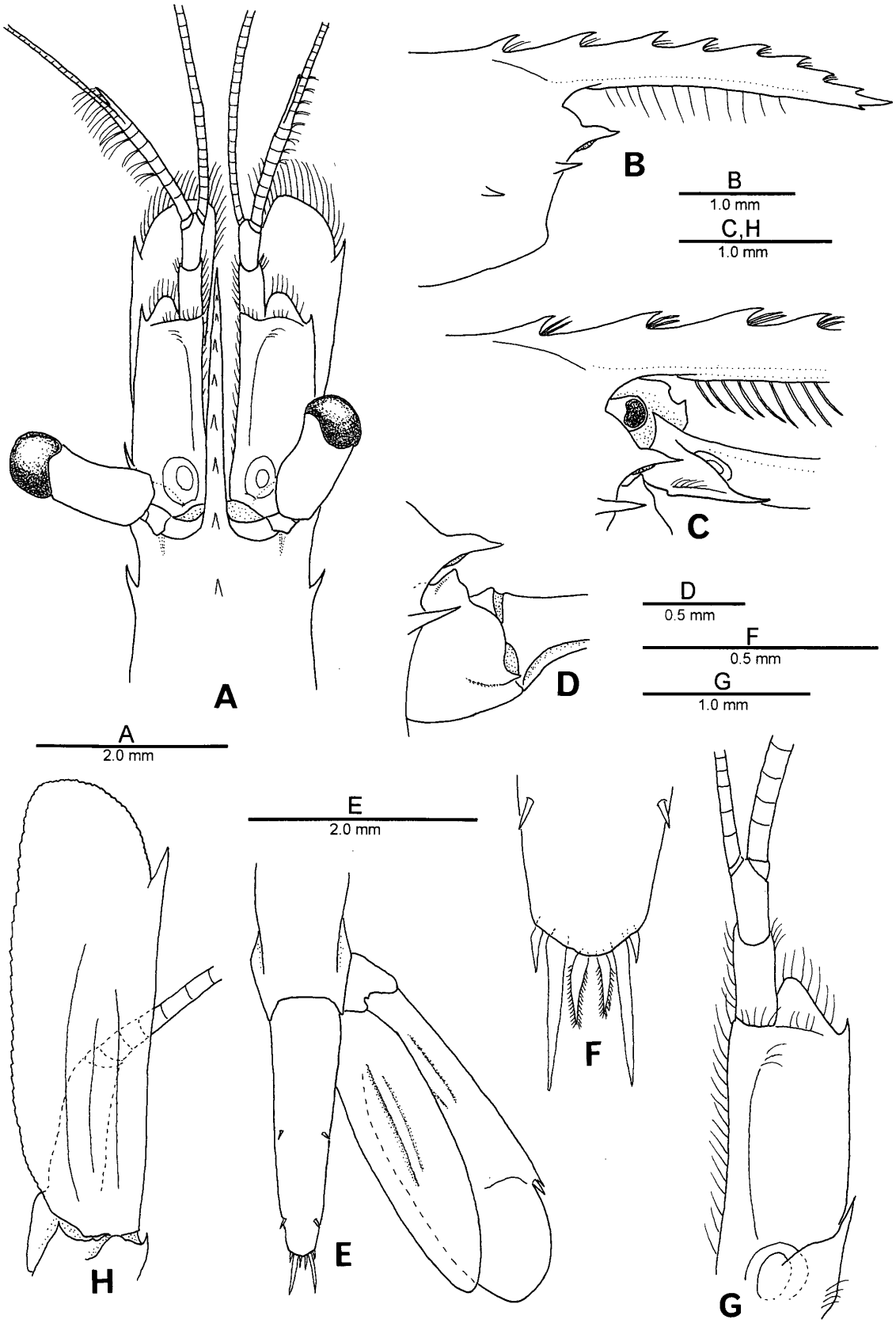

Fig. 2. *Periclimenes sarasvati* sp. nov. Holotype female (NSMT-Cr 14067). A, anterior part of carapace, rostrum and cephalic appendages, dorsal; B, anterior part carapace and rostrum, lateral; C, orbital region of carapace, ophthalmic somite and proximal part of right antennular peduncle, lateral; D, right antennal basicerite, lateral; E, telson and right uropod, dorsal; F, posterior part of telson, dorsal; G, right antennular peduncle, dorsal; H, right antenna, dorsal. E, H, setae omitted.

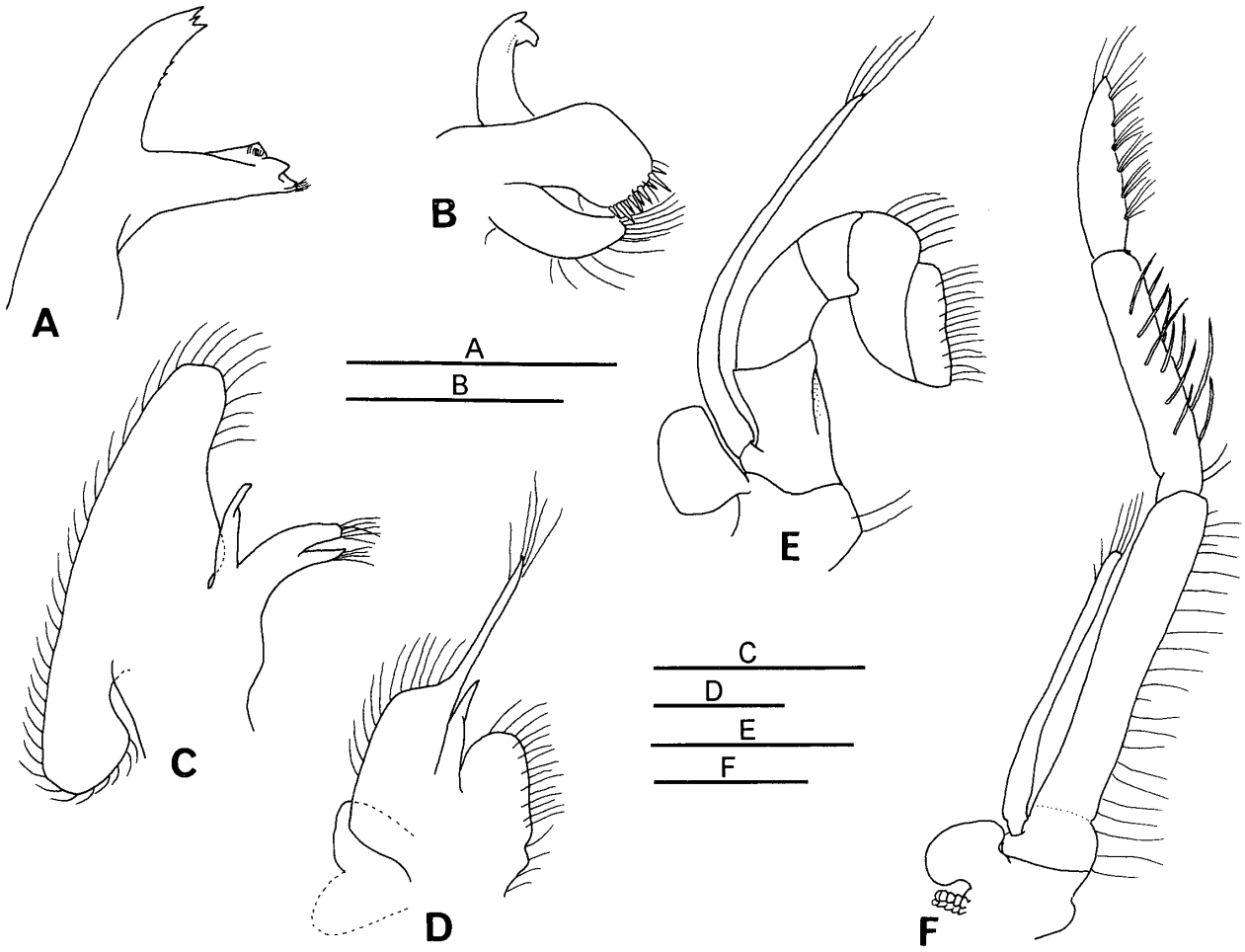

Fig. 3. *Periclimenes sarasvati* sp. nov. Holotype female (NSMT-Cr 14067). A, right mandible, external; B, right maxillule, external; C, right maxilla, external; D, right first maxilliped, external; E, right second maxilliped, external; F, right third maxilliped, lateral. Scales equal 0.5 mm.

ellum biramous, proximal 7–8 segments fused, shorter free ramus 5–7 segmented; lower flagellum slenderer than upper flagellum.

Antenna with stout basicerite (Fig. 2D) armed ventrolaterally with acute tooth, dorsal margin with small raised lobe; scaphocerite (Fig. 2H) overreaching antennular peduncle, 2.50–2.90 times as long as maximum width, lateral margin straight, terminating in strong tooth falling short of distal margin of strongly produced lamella; carpocerite reaching proximal two fifths of scaphocerite.

Epistome unarmed.

Mandible (Fig. 3A) robust, without palp; molar process obliquely truncated distally, with 4 large, blunt teeth; incisor process tapering distally, with 3 acute distal teeth, distomesial margin armed with 3 minute, acute teeth. Maxillule (Fig. 3B) with feebly bilobed palp, internal lobe with small distal protuberance; upper lacinia broad, distal margin truncated, with about 9 simple spines and sparse, short spiniform setae; lower lacinia tapering distally, with some serrulate setae distally. Maxilla (Fig. 3C) with palp slender, tapering distally; distal endite developed, narrow, deeply bilobed, with sparse, simple setae distally; proximal endite obsolete, mesial margin feebly sinuous; scaphognathite well developed, posterior lobe short, distal half of anterior lobe narrow. First maxilliped (Fig. 3D) with long, slender, simple palp; distal endite with mesial margin bearing 2 rows of sparse setae, rounded distally; proximal endite small, rounded, separated from distal endite by shallow notch; caridean

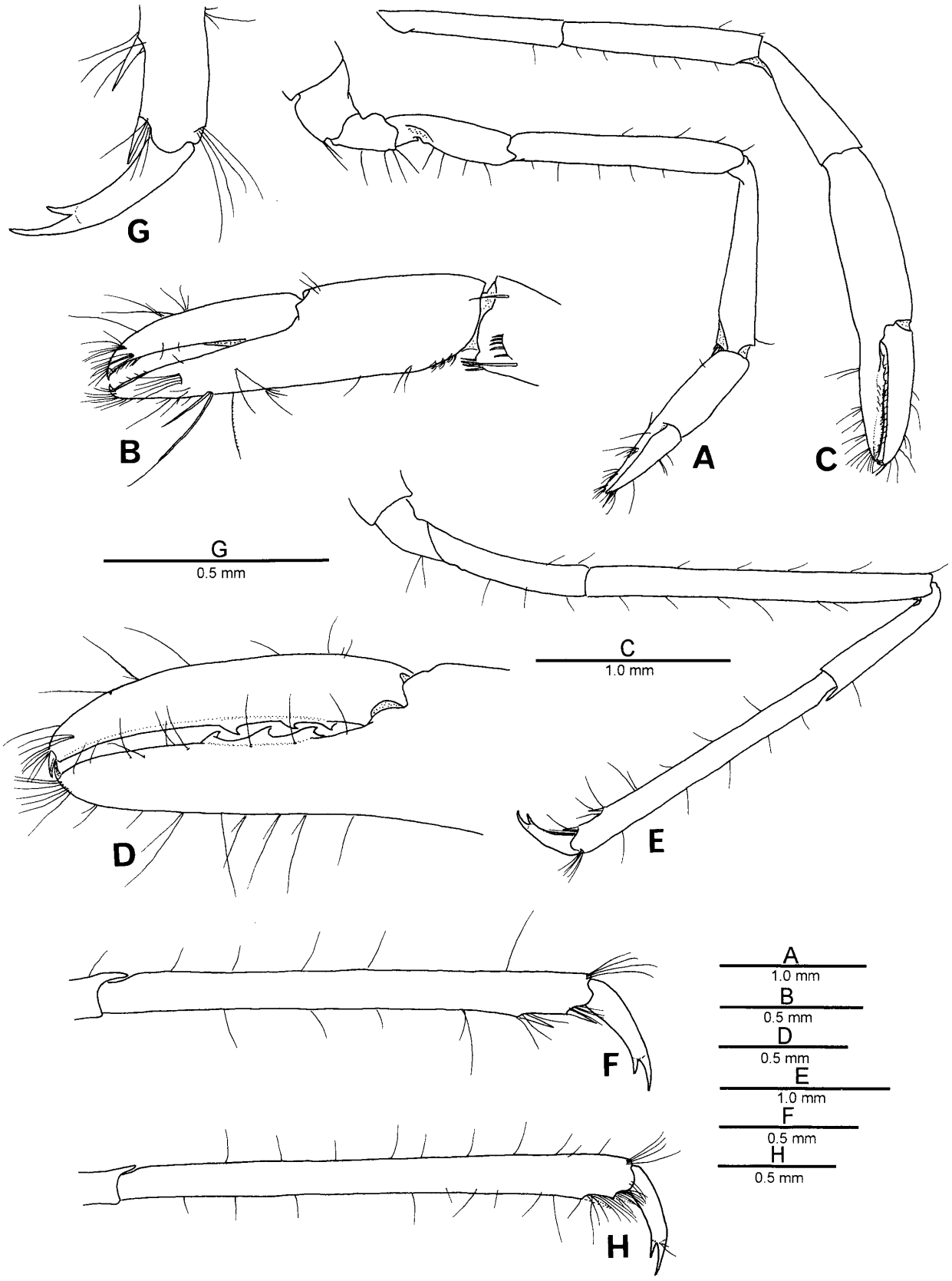

Fig. 4. *Periclimenes sarasvati* sp. nov. Holotype female (NSMT-Cr 14067). A, right first pereiopod, lateral; B, same, chela, mesial; C, right second pereiopod, lateral; D, same, fingers, mesial; E, right third pereiopod, lateral; F, same, propodus and dactylus, lateral; G, same, posterior part of propodus and dactylus, lateral; H, propodus and dactylus of right fifth pereiopod, lateral.

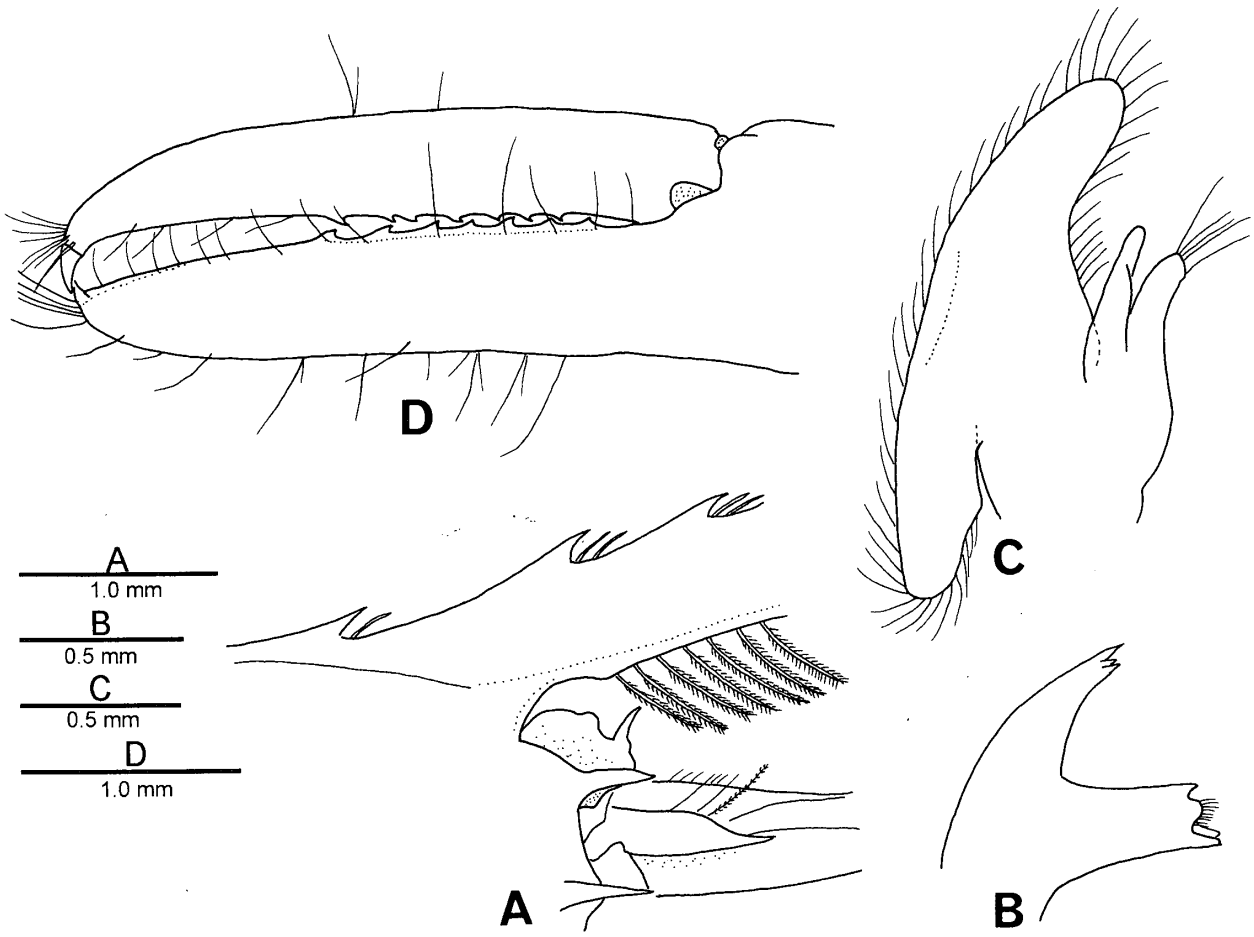

Fig. 5. *Periclimenes venustus* Bruce, 1990. Ovigerous female from Amami-Oshima Island (CMNH-ZC 00869). A, orbital region of carapace, ophthalmic somite and proximal part of right antennular peduncle, lateral; B, right mandible, external; C, right maxilla, external; D, fingers of right second pereiopod, mesial.

lobe broad; exopod with well-developed flagellum; epipod large, subtriangular, feebly bilobed. Second maxilliped (Fig. 3E) with normal endopod; dactylus broad, mesial margin slightly concave; propodus with anterodistal margin broadly rounded; carpus with distinct ventromesial process; merus about twice as long as carpus; ischium and basis completely fused; exopod with well developed flagellum; coxa inflated mesially; epipod oval, without podobranch. Third maxilliped (Fig. 3F) with endopod slender, falling slightly short of distal margin of antennal carpocerite, ischiomerus and basis feebly articulated, mesially with a small notch at junction; ultimate segment tapering distally, mesially with about 6 transverse rows of short setae; penultimate segment about 1.5 times as long as ultimate segment, with long spiniform setae ventrolaterally and ventrally; antepenultimate segment without distolateral spine, ventral surface sparsely setose; exopod with well developed flagellum, distally setose; coxal plate oval; small arthrobranch present.

Branchial formula as in Table 1.

First pereiopod (Fig. 4A) moderately slender, reaching distal margin of scaphocerite. Chela (Fig. 4B) 0.32–0.42 times as long as carapace, subequal to carpus in length; palm subcylindrical, slightly compressed, with 3 transverse rows of short serrulate glooming setae proximally; fingers each terminating in small, hooked unguis, cutting edges situated laterally, entire, 1.13–1.37 times as long as palm. Carpus 0.34–0.42 times as long as carapace, slightly widened distally, with longitudinal row of serrulate glooming setae subterminally. Merus unarmed, 1.15–1.21 times as

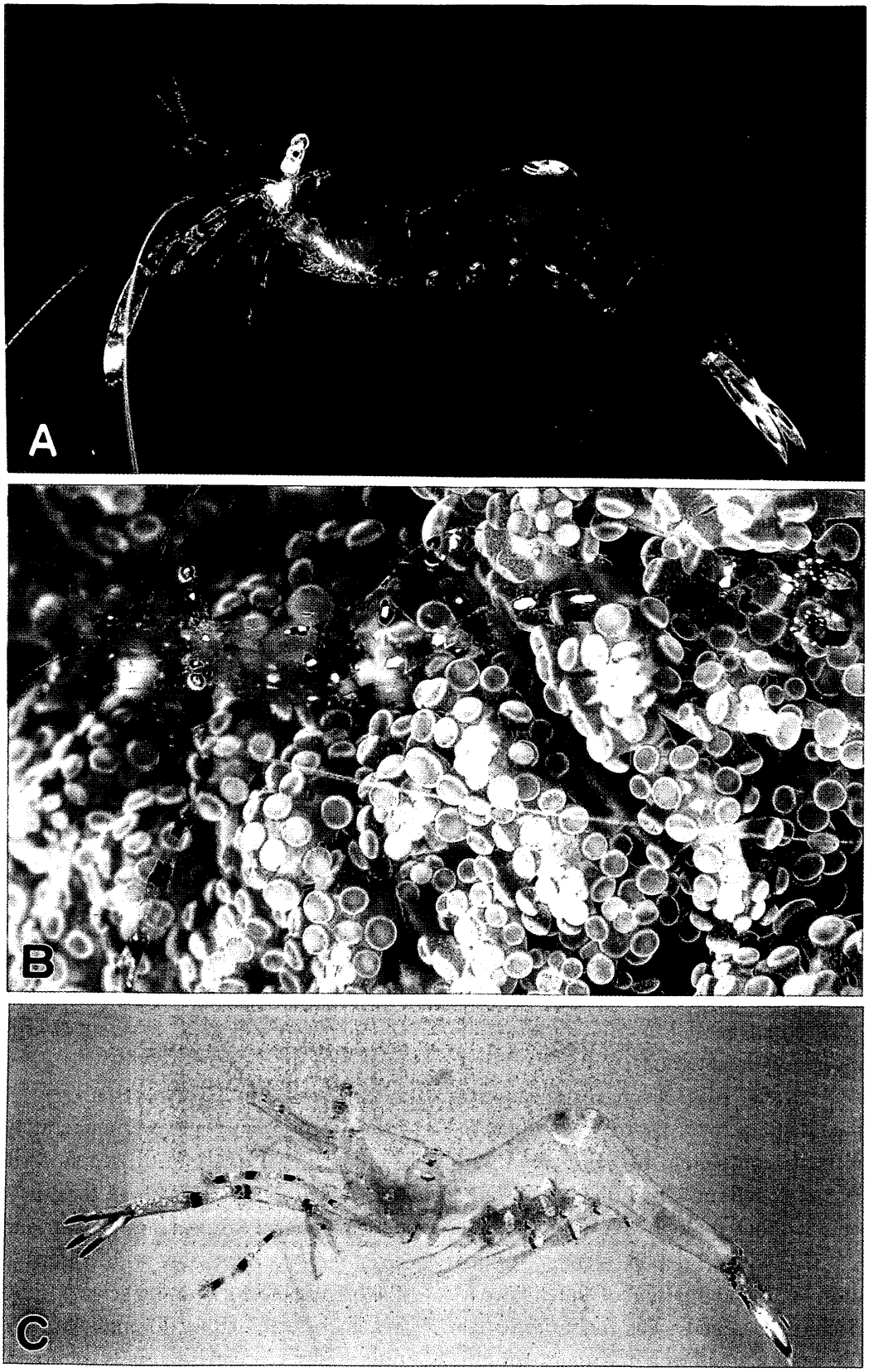

Fig. 6. *Periclimenes sarasvati* sp. nov. A, female paratype from Kume-jima Island (CMNH-ZC 00893), fresh specimen, lateral view (photo by J. Okuno); B, underwater photograph at Zamami-jima Island (specimen not collected) (photo by A. Ono). *Periclimenes venustus* Bruce, 1990. C, ovigerous female from Amami-Oshima Island (CMNH-ZC 00869), fresh specimen, lateral view (photo by J. Okuno).

Table 1. *Periclimenes sarasvati* sp. nov. Branchial formula.

	Maxillipeds			Pereiopods				
	I	II	III	I	II	III	IV	V
Pleurobranchs	–	–	–	1	1	1	1	1
Arthrobranchs	–	–	1	–	–	–	–	–
Podobranchs	–	–	–	–	–	–	–	–
Epipods	1	1	–	–	–	–	–	–
Exopods	1	1	1	–	–	–	–	–

long as carpus. Ischium 0.54–0.60 times as long as carpus. Coxa with minute, setose ventral process.

Second pereiopods (Fig. 4C) well developed, similar, overreaching distal margin of scaphocerite by proximal part of palm. Chela slightly bowed, 0.76–1.15 times as long as carapace, 2.25–3.00 times as long as carpus; palm 1.06–1.60 times as long as dactylus, slightly compressed; dactylus (Fig. 4D) terminating in hooked, acutely pointed unguis, cutting edge situated laterally, armed proximally with 2–4 acute, recurved teeth, remaining part entire, sharply edged; fixed finger (Fig. 4D) generally similar to dactylus, armed proximally with 3–4 acute, recurved teeth. Carpus slender, unarmed, slightly widened distally. Merus slender, unarmed, 1.40–1.77 times as long as carpus. Ischium slender, unarmed, 1.20–1.23 times as long as carpus.

Third pereiopod (Fig. 4E) slender, reaching subequal to distal margin of scaphocerite. Dactylus (Fig. 4G) compressed laterally, dorsal margin convex, ventral margin with 1 subdistal accessory tooth, unguis feebly demarcated. Propodus (Fig. 4F) 2.13–2.63 times as long as carpus, about 3.8 times as long as dactylus, with long distoventral spine and single spine posterior to distoventral spine, dorsal and ventral surface with few short setae. Carpus unarmed. Merus 2.36–2.50 times as long as carpus, unarmed. Fourth pereiopod similar to third. Fifth pereiopod with propodus (Fig. 4H) bearing 1 distoventral spine and 1 subdistal spine on ventral surface and tufts of setae.

Pleopods normal.

Uropod (Fig. 2E) with protopodite posterolaterally produced, but blunt; exopod broad, overreaching posterior margin of telson, broadly rounded distally, lateral margin nearly straight, terminating in small acute tooth, with larger, mobile spine just mesial to distolateral tooth; endopod oval, falling slightly short of posterior margin of exopod.

Coloration. Body and appendages generally transparent. Posterodorsal and posterolateral parts of carapace with or without few white spots bordered by purple spots. Third abdominal somite with white small patch bordered anteriorly and posteriorly by similar-sized, purple narrow patches; in dorsal view, anterior patch V-shaped. Pleura of first to fifth abdominal somites with white spots (surrounded by purple line in mature female) at base of first to third pleopods. Eyestalk dorsally with a white spot surrounded by purple smaller spots, ophthalmic somite without transverse white stripe anterodorsally. First and second pereiopods with hinge regions and finger tips purple. Endopod of uropod with purple rounded patch dorsodistally.

Etymology. The species is named from Sarasvati, an ornate female deity of Hindu mythology, alluding to the striking coloration of the species. In this case, the word *sarasvati* is used as a noun in apposition.

Remarks. *Periclimenes sarasvati* closely conforms to the definition of the '*P. aesopius* species group' given by Bruce (1991). The ambulatory propodi armed only with 1 ventral spine posterior to distoventral spine separate *P. sarasvati* and *P. venustus* from other species of the species group (see Bruce, 1990, 1991; Okuno & Nomura, 2002). The new species is distinguished from *P. venustus* by the following morphological features.

1) The ophthalmic somite of *P. sarasvati* possesses a small 'bec ocellaire' (Fig. 2C), whereas the 'bec ocellaire' of *P. venustus* is long and acute (Fig. 5A).

2) The mandible of *P. sarasvati* is armed with 3 minute and acute teeth at the distomesial

margin of the incisor process (Fig. 3A). The distomesial margin of the incisor process of *P. venustus* is entire (Fig. 5B).

3) The distal endite of the maxilla is deeply bilobed in *P. sarasvati* (Fig. 3C), in contrast, this endite of *P. venustus* is simple (Fig. 5C). Kubo (1940) has briefly discussed the morphological diversity of the endite among several pontoniinid genera. In the species group, the form of the endite may appear to be species specific.

4) In *P. sarasvati*, the second pereiopods overreach the tip of the antennal scaphocerite by the proximal part of palm (Fig. 6A), whereas the pereiopods overreach the tip of the scaphocerite by the distal part of the meri in *P. venustus* (Fig. 6C).

5) In *P. sarasvati*, the cutting borders of both fingers of the second pereiopod are armed with 2–4 recurved teeth (Fig. 4D) through the development, instead of 6–8 recurved teeth in mature female of *P. venustus* (Fig. 5D).

The general coloration of *P. sarasvati* is also similar to that of *P. venustus*. However, the pattern on the third abdominal tergum readily separates these species. The new species has a white small patch that is bordered anteriorly and posteriorly by similar sized, deep purple narrow patches, and the anterior patch is V-shaped in dorsal view (see Fig. 6B). In contrast, *P. venustus* has a white large patch over the posterior half of the somite, the detailed color pattern of which is as follows: the patch is covered with pale purple pigmentation anteriorly and posteriorly in mature female (see Fig. 6C) and there are two indigo spots on anterior and posterior borders of the patch in smaller specimens. Further, the bands on the first and second pereiopods and posterodorsal patch of the uropodal exopod are purple in *P. sarasvati*, instead of indigo in *P. venustus*. Judging from the color pattern represented by underwater photographs, the species reported as *P. venusta* [sic] by Kobayashi (2000) and the unidentified species by Takeda (1986), Jones & Morgan (1994) and Minemizu (2000) are identifiable with the new species.

In several field guidebooks, the present new species has previously been identified with *P. holthuisi* (see Debelius, 1983, 1984; Baensch & Debelius, 1992; Allen & Steene, 1994; Debelius & Baensch, 1994; Colin & Arneson, 1995; Gosliner *et al.*, 1996; Masuda, 1999), and with *P. tosaensis* Kubo, 1951 (see Debelius, 1999). The new species is readily distinguished from *P. holthuisi* by the spination of the ambulatory propodi: in *P. holthuisi*, at least, the distal half of the ventral surface of the propodi is armed with the spaced set of spines (Bruce, 1982, 1990; Fransen *in litt.*). Morphologically, *P. sarasvati* obviously differs from *P. tosaensis* by having the biunguiculate ambulatory dactyli. In *P. tosaensis*, the dactyli are simple (Kubo, 1951).

The following keys may identify the species of the '*P. aesopius* species group'. The key to species by coloration does not include *P. tenuirostris* Bruce, 1991 and *P. tosaensis* because the detailed color pattern of these species is unknown. Hayashi (1986) provided the coloration of *P. tosaensis* based on a fresh dead specimen, and at least, the color pattern of the tergum of the third abdominal somite may separate *P. tosaensis* from the related species (see Bruce, 1990).

Key to the Known Species of the '*Periclimenes aesopius* Species Group'

I Morphology

1. Dactyli of ambulatory pereiopods simple .... *P. tosaensis* Kubo
— Dactyli of ambulatory pereiopods biunguiculate 2
2. Carapace with 2–3 postorbital teeth (third abdominal tergum with posterior median carina) ..... *P. aesopius* (Bate)
— Carapace with 0–1 postorbital tooth..... 3
3. Carpus of second pereiopod distinctly longer than chela (carapace without epigastric spine; third abdominal tergum with posterior median carina; distal endite of maxilla simple) .... *P. longicarpus* Bruce & Svoboda
— Carpus of second pereiopod shorter than chela 4
4. Propodi of ambulatory pereiopods with single

ventral spine posterior to distoventral spine; cornea without ocellus (third abdominal tergum without posterior median carina) 5
— Propodi of ambulatory pereiopods with two or more ventral spines posterior to distoventral spine; cornea with ocellus 6
5. Maxilla with simple distal endite; second pereiopods overreaching tip of scaphocerite by distal part of meri, cutting borders of fingers with 6–8 acute, recurved teeth ....*P. venustus* Bruce
— Maxilla with bilobed distal endite; second pereiopods overreaching tip of scaphocerite by proximal part of palm, cutting borders of fingers with 2–4 acute, recurved teeth..... .....*P. sarasvati* sp. nov.
6. Ophthalmic somite without 'bec ocellaire' (maxilla with bilobed distal endite)..... .....*P. magnificus* Bruce
— Ophthalmic somite with 'bec ocellaire' 7
7. Third abdominal tergum without posterior median carina; antepenultimate segment of third maxilliped without distolateral spine (based only on the holotype of *P. holthuisi* re-examined by Dr. C. H. J. M. Fransen) ....*P. holthuisi* Bruce
— Third abdominal tergum with posterior median carina; antepenultimate segment of third maxilliped with 1–2 distolateral spines.....8
8. Rostrum almost straight, overreaching antennular peduncle; first pereiopod with dactylus longer than palm .....*P. tenuirostris* Bruce
— Rostrum distinctly arched, falling slightly short of distal margin of antennular peduncle; first pereiopod with dactylus shorter than palm.....*P. kobayashii* Okuno & Nomura

II Coloration
(except for *P. tenuirostris* and *P. tosaensis*)

1. Ophthalmic somite without white transverse band 2
— Ophthalmic somite with white transverse band 3
2. Third abdominal tergum with white large patch over posterior half, covered with pale purple pigmentation in mature female, furnished with two indigo spots on anterior and posterior borders in small specimen; bands of two anterior pereiopods and patch of uropods indigo.....*P. venustus* Bruce
— Third abdominal tergum with white small patch, bordered anteriorly and posteriorly by purple narrow patches; bands of two anterior pereiopods and patch of uropods purple ....*P. sarasvati* sp. nov.
3. Posterior part of carapace with white transverse band.....4
— Posterior part of carapace without white transverse band.....5
4. Carapace with red spots; posterior parts of sixth abdominal somite and uropodal protopodite red....*P. kobayashii* Okuno & Nomura
— Carapace without red spots; posterior parts of sixth abdominal somite and uropodal protopodite dark brown .....*P. aesopius* (Bate)
5. Carapace covered with red and white spots..... .....*P. holthuisi* Bruce
— Carapace without red and white spots.....6
6. Proximal and distal parts of second pereiopodal carpus purple ....*P. longicarpus* Bruce & Svoboda
— Second pereiopodal carpus uniformly white.... .....*P. magnificus* Bruce

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